

Los Alamos National Laboratory Transuranic Waste LSDDP

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Goals of the project supporting DVRS development

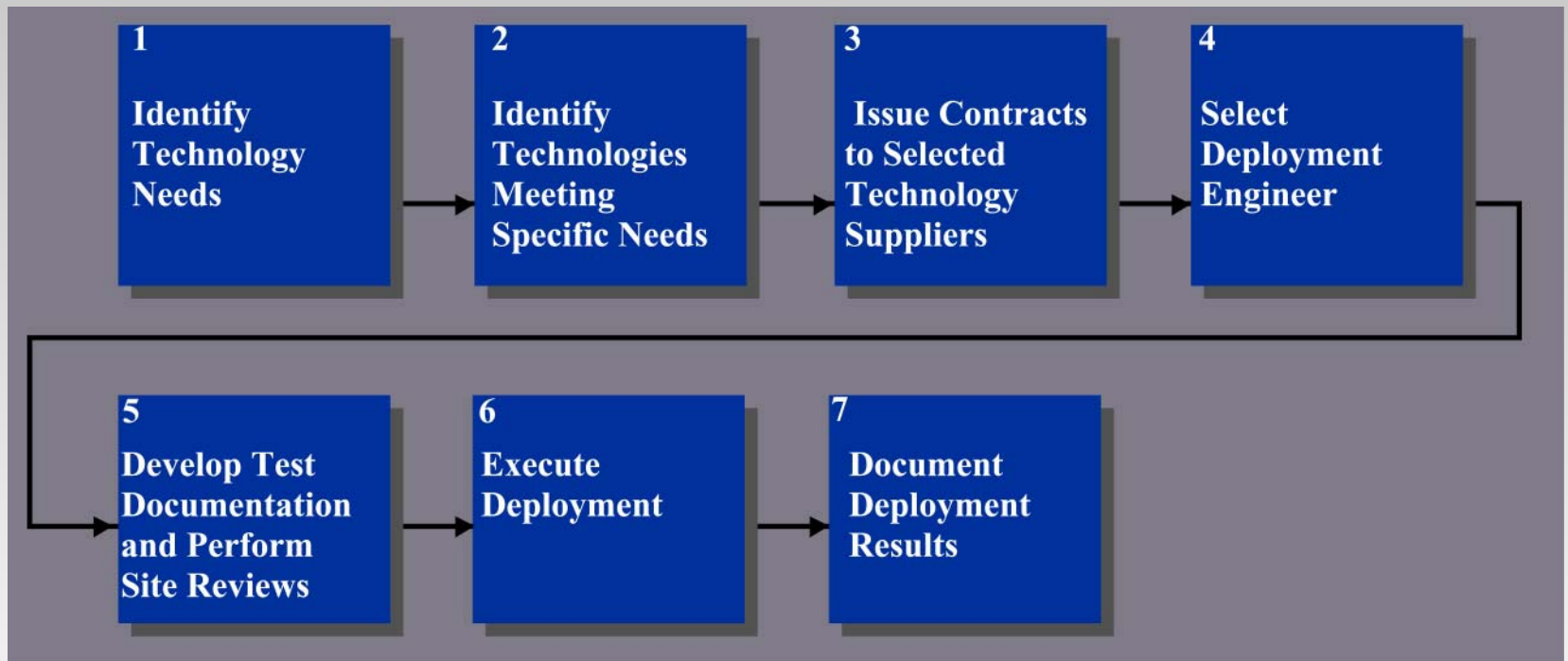
- Identify technologies ready for deployment for the characterization, decontamination, and volume reduction of TRU Waste/TRU contaminated material
- Demonstrate technologies that have reduce cost, risk, and schedule
- Compare technologies side by side with baseline approaches
- Provide an aggressive communications program
- Maximize funding to the demonstration contractors
- Maximize industrial participation
- Minimize impacts to the ongoing baseline programs on site
- Accomplish measurable D&D
- Develop a communications program to provide access to results
- Demonstrate cooperative efforts throughout EM



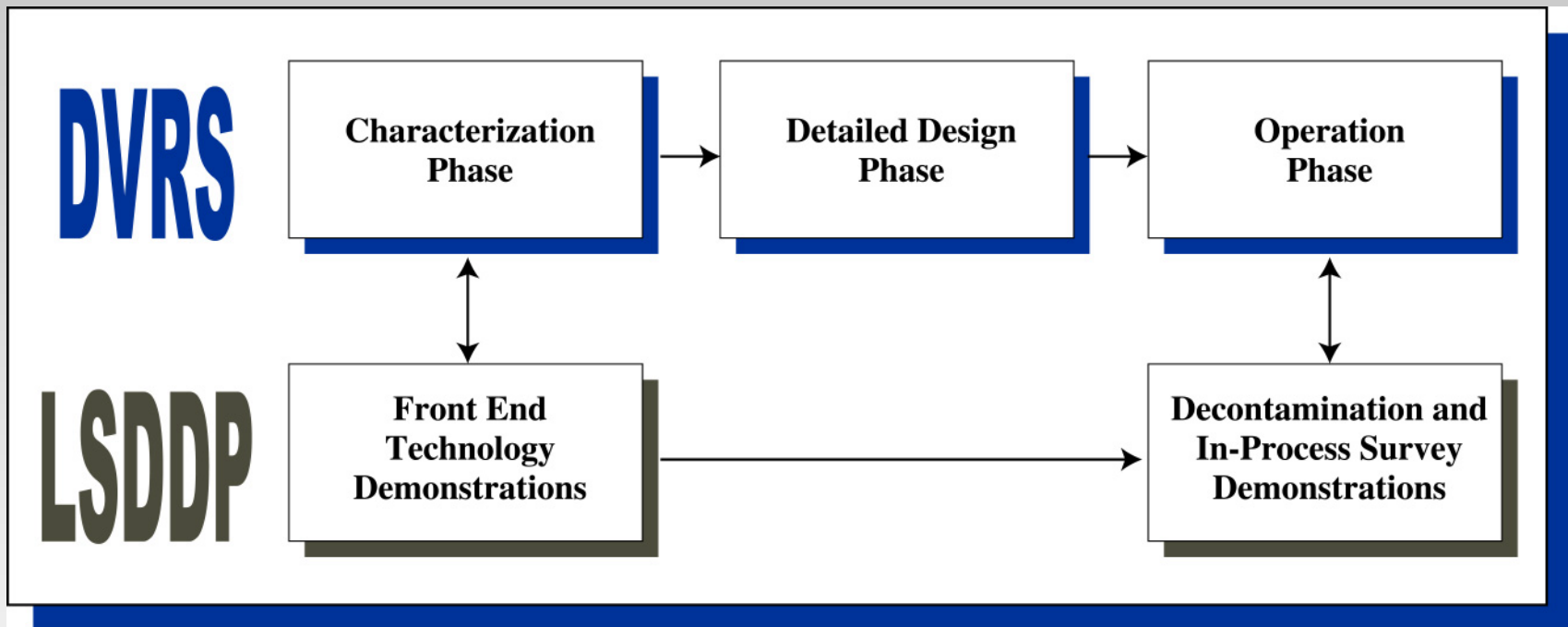
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CRITERION 1

Overall technical approach



Coordination of the DVRS and LSDDP Projects



Crated LANL large metal objects after retrieval



LSDDP demonstrated mature technologies

- Two characterization technology demonstrations used full scale prototypes
- Two demonstrations conducted by commercial suppliers of industrial systems
- One demonstration was conducted by a D&D service supplier
- One demonstration of a LANL developed technology
- Three demonstrations utilized commercially developed equipment



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CRITERION 1

LSDDP features supporting EM Thrusts

Thrust 1 Features

- ICT is multidisciplinary team of D&D experts
- RFETS involvement

Thrust 2 Features

- Focus is reduced cost/ reduced risk alternatives for closure
- Demonstrated several technologies with risk reduction benefit



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CRITERION 1

Thrust 1 – Closure Site Support

- Technology Selection Committee was multidisciplinary team of experts for DOE sites and D&D contractors
- Technology Selection Committee reviewed and amplified needs analysis
- Involvement by RFETS, Savannah River, Hanford



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Thrust 2 – Alternative Approaches

- DVRS baseline is an integrated facility for characterization, decontamination, and volume reduction of gloveboxes
- Technology selection was focused on risk and cost reduction technologies
- Technology selection heavily weighted complex-wide applications



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CRITERION 1

Specific needs identified and addressed

- Removal of lead shielding
- Analysis of residual lead on stainless steel glovebox part
- In-process TRU characterization
- Opening the plywood crates with fiberglass reinforced plastic
- Spot removal of contamination
- Operational data collection and management
- Headspace gas sampling for combustible gases
- Improved spot air filtration systems
- Improved PPE
- Improved air monitoring systems



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CRITERION 1

Technology Demonstration: Fog and Strip Technology

- Demonstration location - A highly contaminated PermaCon
- The baseline was a simple strippable coating
- Demonstration took place May 2001



Applying Strippable Coating

The combination Fog and Strip outperformed the baseline

	Baseline Stripcode	Fog and Strip
Surface	% Reduction in Activity	
Aluminum	90	91
Plexiglass	48	55
Stainless Steel	88	94

The combination Fog and Strip outperformed the baseline.

Technology Demonstrations: Race Scan Communications System

- Technology was developed for NASCAR race driver communications with the pit crew
- Technology demonstrated at two sites at LANL TA-54
- The baseline was hand signals or shouting through full face masks
- Demonstration took place July 2001



Race Scan Application at LANL

The Race Scan demonstration was very successful

- Both demonstration locations found the technology to be beneficial
- One demonstration location halted work until systems could be procured
- Several other DOE sites have queried LANL about deployment

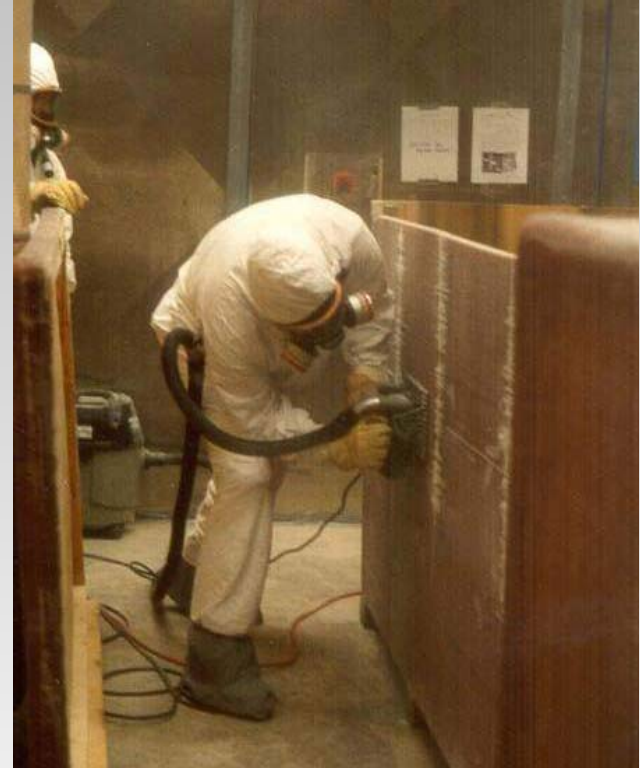


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CRITERION 1

Technology Demonstration: Crate Cutting Tools

- 5 cutting tools were evaluated to identify the safest/ fastest tools for opening fiberglass reinforced crates
- Baseline was a reciprocating saw
- Crate mockups were constructed at FIU/HCET for tool evaluation
- LANL technicians used the tools wearing full Anti-Cs
- Demonstration took place August 2001



LANL Technical Cutting Crate

The Crate Cutting tool evaluation was very successful:

- The fastest/ easiest handling saw was identified.
- The cutting technique was developed
- The Evolution 180 saw successfully cut stainless steel



Evolution 180 saw in use

Technology Demonstration; Electrochemical Decontamination

- Electrochemical decontamination system, developed and routinely used at LANL, was evaluated using LSDDP rigor
- Baseline is hand wipedown
- Demonstration was in a highly Pu contaminated glovebox at LANL
- Half of the glovebox was wiped down with rags, and half was deconned with electrochemical system
- Demonstration took place September/October 2001



Electrochemical Fixture

The electrochemical decon demonstration was successful

- The data facilitates straightforward comparison of electrochemical decon to hand wipedowns
- The electrochemical decon technique gave higher DFs
- The electrochemical technique gives secondary waste issues
- Cost are roughly comparable

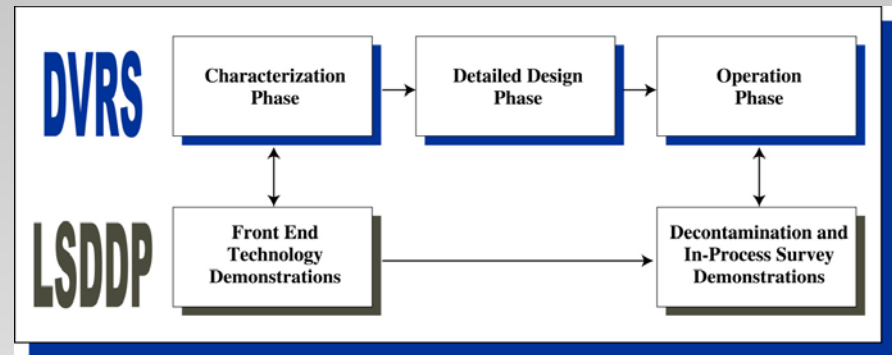


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CRITERION 1

Timeliness of development, demonstration, and deployment

- DVRS construction is complete, and awaiting final approval of the authorization basis documents
- LSDDP has preceded DVRS operation in all phases and provided operational improvements



LSDDP has preceded DVRS operation in all phases

Project complements other ongoing technology development work

- No demonstrations involved technologies under development



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CRITERION 1

Performance characteristics of technologies

Demonstration	Comparison with Baseling
AeroGo Air Pallets	Baseline did not perform, air pallets performed well
VACIS Radiography	Radiography not in baseline, substantial risk reduction achieved
MCS Radiographpy	Radiography not in baseline, substantial risk reduction achieved
Mega-Tech Cutter	Limited cost savings, considerable risk reduction
Ntvision for Waste Data	Saves 1 FTE in data management
Race Scan Communication System	30 – 50% reduction in time to conduct activities in full Anti-Cs
Fog & Strip Decontamination	Fogging technology provided DF of 1000 in DAC; strippable coating did not meet objectives.
Electrochemical Decontamination	Electrochemical very effective in DF, but secondary waste issues limit use
Crate Cutting Tools	Identified most favored tools for crate opening; 25% savings likely



CRITERION 2

Safety features of technologies

- Crate radiography technologies improve crate opening safety
- Air lift pallets improve handling safety
- Waste package documentation technology removes one FTE from area
- Communication system improves worker safety
- Two saws identified that minimize risk, improve speed
- Saw platform reduces worker fatigue



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CRITERION 2

Technologies became baseline technology

- Crate characterization technologies are considered baseline
- Communication system gaining favor quickly
- Metal cutting saw gaining interest quickly



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CRITERION 2

Progress in the past year

- Required to complete 5 demonstrations
- Race Scan demonstration
- Fog and Strip
- Electrochemical decontamination
- Evolution 180
- Porter cable
- Saw platform



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CRITERION 3

Budget Status

Budget Item	Budget (\$K)	Expenditure (\$K)
ICT Operation	330.5	222.5
Technology Selection	259.1	320.5
Demonstrations	1,392.5	878.2
Communications	141.0	84.9
Reporting	204.7	223.9
Project Closeout	59.5	
Total Expenditures To Date	2,387.3	1,730



NATIONAL ENERGY TECHNOLOGY LABORATORY
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CRITERION 3

Schedule status

- Four FY01 demonstrations complete, cost data is to be submitted
- Crate cutter demonstration still to be completed at DVRS
- Metal cutting saw demonstration still to be completed at DVRS
- Identified RFETS demonstration on hold



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CRITERION 3

Community, regulatory, and other/stakeholder activities

- All LANL demonstrations complied with regulatory and authorization basis documentation
- Media invited to two demonstrations



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CRITERION 3

Commercialization activities

- Electrochemical decontamination technology has been used at LANL, but is not commercially available 9 (developed by LANL)
- ICT member reviewing potential commercial application



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CRITERION 3

Commitments to demonstrate or deploy the technology

- DVRS/LANL has deployed 5 of the demonstrated technologies
- DVRS intends to demonstrate and deploy the two cutting technologies
- Deployment of some technologies around LANL is in progress



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CRITERION 3

Technical peer review

- Project was reviewed at three LSDDP mid-year presentations
- Mid year presentation comments addressed



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CRITERION 3

Invention disclosure and intellectual property issues

- None identified



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CRITERION 3

Conclusion

- RaceScan is already deployed at several LANL sites with a measurable cost savings and risk reduction
- Fog and Strip technology is under consideration for specific applications at LANL
- The crate cutting demonstration will be completed this year
- The Evolution 180 saw will be applied at LANL
- Electrochemical decontamination is best considered a pre-disposal treatment method

